

## IN THE CLAIMS

What is claimed is:

1. A coated low density polymeric foam comprising:  
a low density polymeric foam substrate having a coating, the coating comprising a prepolymer, a monomer, a catalyst and a graft initiator.
2. The coated low density polymeric foam of claim 1, where in the low density polymeric foam substrate has a density of up to about 10 lbs/ft.<sup>3</sup>
3. The coated polymeric foam of claim 1, wherein the low density polymeric foam is formed from the group consisting of polyvinyl chloride, acrylonitrile butadiene rubber, styrene butadiene rubber, ethylene-propylene-diene rubber, polychloroprene, polyethylene, polypropylene, co-polymers of ethylene, co-polymers of propylene and combinations thereof.
4. The coated low density polymeric foam of claim 1, further comprising a flexidizing agent.
5. The coated low density polymeric foam of claim 4, wherein the flexidizing agent comprises a latex.

6. The coated low density polymeric foam of claim 1, wherein the graft initiator is selected from the group consisting of ferric ions, silver oxide and silver particles.
7. The coated low density polymeric foam of claim 1, wherein the graft initiator is selected from the group consisting of ferrous ammonium sulfate and silver nitrate.
8. The coated low density polymeric foam of claim 1, further including a redox catalyst.
9. The coated low density polymeric foam of claim 1, wherein the catalyst comprises a peroxide.
10. The coated low density polymeric foam of claim 1, further comprising a UV inhibitor.
11. The coated low density polymeric foam of claim 1, wherein the monomer is a urethane acrylate.
12. The coated low density polymeric foam of claim 1, wherein the coating is water based.

13. The coated low density polymeric foam of claim 1, wherein the prepolymer comprises a urethane.

14. The coated low density polymeric foam of claim 1, wherein the coating has a thickness of between about 10 microns and about 500 microns.

15. A method for manufacturing a coated polymeric low density foam comprising:

providing a polymeric low density foam substrate;

mixing together a prepolymer, a monomer, a catalyst, a graft initiator and water to form a coating; and

applying the coating to the low density foam substrate.

16. The method of claim 15, further including curing the coating on the low density polymeric foam at ambient temperatures.

17. The method of claim 15, further including curing the coating on the low density polymeric foam at elevated temperatures.

18. The method of claim 15, wherein the step of applying the coating is selected from the group consisting of spraying, dipping, rolling and sponging the coating onto the substrate.

19. The method of claim 15, where in the low density polymeric foam substrate has a density of up to about 10 lbs/ft.<sup>3</sup>

20. The method of claim 15, wherein the low density polymeric foam is formed from the group consisting of polyvinyl chloride, acrylo nitrile butadiene rubber, styrene butadiene rubber, ethylene-propylene-diene rubber, polychloroprene, polyethylene, polypropylene, co-polymers of ethylene, co-polymers of propylene and combinations thereof.

21. The method of claim 15, further comprising adding a flexidizing agent to the coating.

22. The method of claim 21, wherein the flexidizing agent comprises a latex.

23. The method of claim 15, wherein the graft initiator is selected from the group consisting of ferric ions, silver oxide and silver particles.

24. The method of claim 15, wherein the graft initiator is selected from the group consisting of ferrous ammonium sulfate and silver nitrate.

25. The method of claim 15, further including adding a redox catalyst to the coating.

26. The method of claim 15, wherein the catalyst comprises a peroxide.
27. The method of claim 15, further including adding a UV inhibitor to the coating.
28. The method of claim 15, wherein the monomer is a urethane acrylate.
29. The method of claim 15, wherein the prepolymer is water dispersible.
30. The method of claim 15, wherein the prepolymer comprises a urethane.
31. A coated polymeric foam comprising:  
a polymeric foam substrate having a coating, the coating comprising a water dispersible prepolymer, a monomer, a catalyst and a graft initiator.
32. The coated polymeric foam of claim 31, where in the polymeric foam substrate has a density of up to about 10 lbs/ft.<sup>3</sup>

33. The coated polymeric foam of claim 31, wherein the polymeric foam is formed from the group consisting of polyvinyl chloride, acrylo nitrile butadiene rubber, styrene butadione rubber, ethylene-propylene-diene rubber, polychloroprene, polyethylene, polypropylene, co-polymers of ethylene, co-polymers of propylene and combinations thereof

34. The coated polymeric foam of claim 31, further comprising a flexidizing agent.

35. The coated polymeric foam of claim 31, wherein the graft initiator is selected from the group consisting of ferrous ammonium sulfate and silver nitrate

36. The coated polymeric foam of claim 31, wherein the catalyst comprises a peroxide.

37. The coated polymeric foam of claim 31, further comprising a UV inhibitor.

38. The coated polymeric foam of claim 31, wherein the monomer is a urethane acrylate.

39. The coated polymeric foam of claim 31, wherein the prepolymer comprises a urethane.

40. A method for manufacturing a coated polymeric foam comprising:  
providing a polymeric foam substrate;  
mixing together a water dispersible prepolymer, a monomer, a catalyst, a graft initiator and water to form a coating; and  
applying the coating to the low density foam substrate.

41. The method of claim 40, further including curing the coating on the polymeric foam at ambient conditions.

42. The method of claim 40, further including curing the coating on the polymeric foam at elevated temperatures.

43. The method of claim 40, wherein the step of applying the coating is selected from the group consisting of spraying, dipping, rolling and sponging the coating onto the substrate.

44. The method of claim 40, wherein the polymeric foam substrate has a density of up to about 10 lbs/ft.<sup>3</sup>